REMARKS

Claims 1-7 are currently pending in the application. By this amendment, claim 1 is amended. A marked-up copy of claim 1 is attached. Support for the amendment to claim 1 is provided at pages 8 and 9 of the present specification. Specifically, pages 8 and 9 clearly describe resolving the durations based on the use of actual delayed arrival durations or times of information of multimedia objects due to network problems or playback delays. For example, this language is clearly disclosed in the example equations and explanations at pages 8 and 9 of the specification. This is further supported in the function blocks of Figures 4-6. No new matter is added. Reconsideration in view of the above amendments and the following remarks is respectfully requested.

Allowed Claims

Applicants acknowledge with appreciation that claims 3 and 4 are allowed. However, Applicants submit that claims 1 and 2 and newly added claims 5-7 are also allowable and that the entire application should be passed to issuance.

Newly Added Claims

Newly added claims 5-7 are presented for the Examiners consideration. Support for these three claims can be found on pages 8 and 9.

35 U.S.C. §103(a) Rejections

The Examiner rejected claims 1 and 2 under §35 U.S.C. §103(a) as unpatentable over Kim et al. (U.S. Patent 5,659,790) in view of Graf (U.S. Patent 6,397,251). Applicant respectfully traverses this rejection.

Applicant has amended claim 1 to better define the claimed invention in accordance with the Examiners broad interpretation thereof. Specifically claim 1 is amended to recite, in part:

> A method of progressive time stamp resolution in a multimedia presentation comprising the steps of:
>
> ....

> resolving the duration of multimedia objects using said information based on actual multimedia object durations and actual delayed arrival time of information of multimedia objects to be played. (emphasis added)

In order to reject a claim under 35 U.S.C. §103(a) the MPEP mandates that three basic criteria must be met.

> First, there must be some suggestion or motivation, either in the reference themselves or in knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine the reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all of the claimed limitations.

Kim Reference

Kim generally "relates to composing and playing multimedia documents with variable play time on a computer system and, more particularly, to composing and playing multimedia episodes in multimedia documents so that they are presented correctly in time when the document play time is varied." (column 1, lines 6-12).

In the Office Action, the Examiner agrees that Kim does not teach:

> " resolving the durations of multimedia objects using said information based on actual multimedia object durations and delay arrival time of information of multimedia objects to be played."

In other words, there is no dynamic process for correcting playback due to network delays or playback errors. If there is any delay during transmission of the objects, the temporal layouts will not be played back properly.

Graf Reference

Graf is directed to system of distribution of multimedia files by file servers over an arbitrary network for information transfer, like, wide area networks or local area networks. The system comprises a sender side 1 wherein a video file is read from a mass

storage device 2 and then sent across a network with the help of a rate control device. A receive buffer 4 buffers the video output before being read by a video decoder 5. The system provides a time delay for the presentation of a multimedia file in order to account for the delayed arrival of frames at the receiver due to the spreading of the transmission of these frames over time.

In rejecting the claimed invention, the Examiner asserted that:

> "Graf teaches resolving the durations of multimedia objects using said information based on actual multimedia object durations and delay arrival time of information of multimedia objects to be played (providing a additional time delay for the presentation of a multimedia file in order to account for the delayed arrival of frames at the receiver due to the spreading of the transmission of the frames over time...The time delay can be simply adapted to other features of the underlying network... The relationship between additional time delay and transmission rate can be calculated; col. 4, lines 15-53/ the arrival of the information at the receiver is delayed; col. 5, lines 49-56)."

Applicant submits that Graf pre-calculates this delay value offline and the primary purpose is to accommodate a known bandwidth of the particular network environment (col. 4, lines 19-26) and further that this rate control delay mechanism is meant to prevent buffer underflow and overflow in the receiver (col. 4, lines 26-29). This pre-calculated delay is related to the transmission rate and requires scanning the presentation file, which takes a few minutes for typical file (col. 4, lines 39-44). This delay is stored at the beginning of the respective presentation file and taken into account at the initialization stage of the presentation (col.4, lines 54-57). This delay value "D" is thereafter used to delay decoding of the video by an initial delay value of "D" relative to the start of transmission (col. 5, lines 54-56). This delay value calculation is based particularly upon the projected/anticipated transmission bandwidth of the network (col. 4, lines 23-26).

However, Applicant submits that this delay value is not an *actual* delay value (i.e., one that is based upon actual network conditions *at the time of transmission*) but a pre-modeled value based on a projection, i.e., a proposed rate control (col. 4, line 26) that neglects delay and delay jitter in the network (col. 5, lines 40-42). Graf explicitly states that in *a real receiver,* network induced delay jitter must be coped with using additional buffer and synchronization means (col. 5, lines 44-46).

In contrast, the present invention is directed to the transmission and reception of multimedia files that automatically compensate for network delays or playback delays. In the present invention, unlike Graf, no pre-calculation of delays (prior to transmission of the multimedia) is required. Nor does the present invention concern itself with other delay issues such as jitter or re-transmissions. The mechanisms of the present invention accommodates actual delays automatically since any actual delays that may occur during transmission of a multimedia file to an output device are compensated by adjusting the relative timing of the multimedia objects that has been received at the client. As stated above, the need to pre-calculate any delay factor before transmission (as is necessary in Graf) is a significant inconvenience as it takes extra effort and time, which this present invention is substantially indifferent.

Additionally, and very importantly as a distinguishing feature, pre-calculation by Graf is based upon a model that intends to accommodate a particular network's bandwidth. This delay calculation is not based upon actual delays encountered due to the transmission of the multimedia object. In Graf, the delay is pre-calculated (i.e., estimated) off-line and prepended to the multimedia file (col. 4, lines 54-57). Since the present invention automatically resolves any delays and accomplishes the playing adjustment of multimedia objects relative to one another (e.g, that occur due to actual network transmission delays or actual playback delays) no special pre-calculation of any delay factor is necessary prior to transmission of the multimedia to a client (see pages 7-9). Additionally, the delay factor "D" of Graf is a fixed delay that is processed immediately upon reception of any transmitted object. In the case of present invention, any resulting delay in playing an object can occur at anytime and is progressive.

Therefore, since neither the Kim reference or the Graf reference suggests or teaches using "the actual delayed arrival time of information..." (emphasis added) of

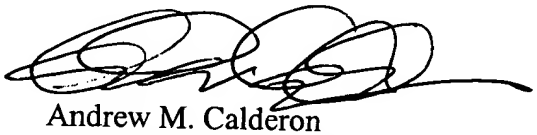
claim 1, Applicant submits that the references fail to teach all the elements of the claimed invention and that it would not have been obvious to one skilled in the art to combine the teachings of Graf and Kim, and if any combining did take place, it would not provide the novel features of the claimed invention.

Claim 2 is a dependent claim of independent claim1, which Applicant now believes is patentably distinct and is therefore drawn to allowable subject matter.

Conclusion

In view of the foregoing amendments and remarks, Applicant submits that the combination of Kim and Graf is not obvious and cannot produce the features of the claimed invention. Further, Applicants submits that all of the claims are patentably distinct from the prior art of record and are in condition for allowance. The Examiner is invited to contact the undersigned at the telephone number listed below, if needed. Applicant hereby makes a written petition for extension of time if needed. Please charge any deficiencies and credit any overpayment of fees to Attorney's Deposit Account No. 23-1951.

Respectfully submitted,



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MARKED-UP COPY OF THE CLAIMS

1.(Amended) A method of progressive time stamp resolution in a multimedia presentation comprising the steps of:

supplying a player of a multimedia presentation with information comprising two labels, one for a multimedia object's start time and one for the multimedia object's end time relative to other multimedia object start and stop times, and three durations, a minimum duration, a maximum duration and a preferred duration for each multimedia object prior to starting playback of the multimedia object; and

resolving the duration of multimedia objects using said information based on actual multimedia object durations and actual delayed arrival time of information of multimedia objects to be played.

APPENDIX "A"

CLAIMS

A copy of all entered claims and a status of the claims is provided below.

1. A method of progressive time stamp resolution in a multimedia presentation comprising the steps of:

supplying a player of a multimedia presentation with information comprising two labels, one for a multimedia object's start time and one for the multimedia object's end time relative to other multimedia object start and stop times, and three durations, a minimum duration, a maximum duration and a preferred duration for each multimedia object prior to starting playback of the multimedia object; and

resolving the duration of multimedia objects using said information based on actual multimedia object durations and actual delayed arrival time of information of multimedia objects to be played, the actual delayed arrival time being an absolute difference between a known duration and the preferred duration of the multimedia objects.

2. The method of progressive time stamp resolution in a multimedia presentation recited in claim 1 wherein the step of resolving comprises the steps of:

calculating minimum and maximum end times for over all multimedia objects;

calculating actual end times that are shared by all multimedia objects; and

recalculating a preferred duration of each multimedia object.

3. A method of progressive time stamp resolution in a multimedia presentation, comprising the steps of:

supplying a player of a multimedia presentation with information comprising two labels, one for a multimedia object's start time and one for the multimedia object's end time relative to other multimedia object start and stop times, and three durations, a maximum duration and a preferred duration for each multimedia object prior to playback of the multimedia object; and

resolving the durations of the multimedia objects using said information based on actual multimedia object durations and arrival of information of multimedia objects to be played, wherein the step of resolving comprises the steps of:

collecting all the dependency relations for a label Px, by taking all objects *n* that have Px as the label for their end time:

$$t_n + \text{minimum}(n) \leq t_x \leq t_n + \text{maximum}(n) \quad n = 1,\ldots,N$$

where t_n is the start time of object *n*, and *N* is the number of objects;

using the *N* relations to calculate the tightest bounds on t_x:

$$\min\{t_x\} \leq \{t_x\} \leq \max\{t_x\}$$

with

$$\min\{t_x\} = \max\{t_x + \text{minimum}(n)\} \quad n = 1,\ldots,N$$

$$\max\{t_x\} = \min\{t_x + \text{maximum}(n)\} \quad n = 1,\ldots,N;$$

recalculating bounds on the duration of each object *n*, by using:

$$\text{duration}(n) = t_x - t_n$$

to get

$$\min\{t_x\} - t_n \leq \text{duration}(n) \leq \max\{t_n\} - t_n \quad n=1,\ldots N; \text{ and}$$

recalculating the preferred duration of each object *n* according to the process:

if (preferred(*n*) < $\min\{t_x\} - t_n$) then

preferred(*n*) = $\min\{t_x\} - t_n$

else if (preferred (*n*) > $\max\{t_x\} - t_n$) then

preferred (*n*) = $\max\{t_x\} - t_n$

end if.

4. The method of progressive time stamp resolution in a multimedia presentation recited in claim 3 wherein the step of resolving further comprises the steps of:

using as the general error criterion for resolving the duration of each multimedia object:

$$E = \sum_{n=1}^{N} \{\text{duration}(n) - \text{preferred}(n)\}^2$$

or, substituting duration(n) = t_x - t_n:

$$E = \sum_{n=1}^{N} \{t_x - t_n - \text{preferred}(n)\}^2$$

and taking the derivative of E with respect to t_x, and setting this to 0 to obtain the optimal solution for the absolute time t_x of label Px as:

$$t_x = \frac{1}{N} \sum_{n=1}^{N} \{t_n + \text{preferred}(n)\}; \text{ and}$$

calculating the corresponding duration of multimedia object n as:

duration(n) = t_x - t_n.

5. The method according to claim 1, further comprising the step of playing said each multimedia object.

6. The method according to claim 1, wherein said actual multimedia object durations are larger than a preferred duration.

7. The method according to claim 1, wherein said actual multimedia object durations are smaller than a preferred duration.